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Conference Abstract

Sydney Harbour Atlas

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Abstract

The estuarine harbour of Sydney, Nova Scotia on the island of Cape Breton has supplied goods and services to humans since the Holocene transgression. As an urban marine ecosystem and strategically located maritime port, it has supported commercial fisheries, military campaigns, and coal and steel industries since the 16th century. Now in the post-industrial era of the Anthropocene, the good burghers of Sydney seek to re-vitalize the commercial port while maintaining the natural assets of the harbour. The recent completions of the tar ponds remediation, the dredge realignment of the shipping channel and creation of a large, new industrial surface, benchmark the next phase in the history of the Harbour.

The objective of the Sydney Harbour Atlas (Fig. 1) is to assemble all of the data, information and knowledge of the ecosystem in a secure, accessible and entertaining geo-spatial reference. The purposes of the Atlas are to create an effective decision support tool for planning and management, to catalogue the value of the ecosystem goods and services provided by the harbour and portray them in a manner that informs all stakeholders in its future, and to provide a training and exploration platform for highly qualified personnel in the tertiary education sector.

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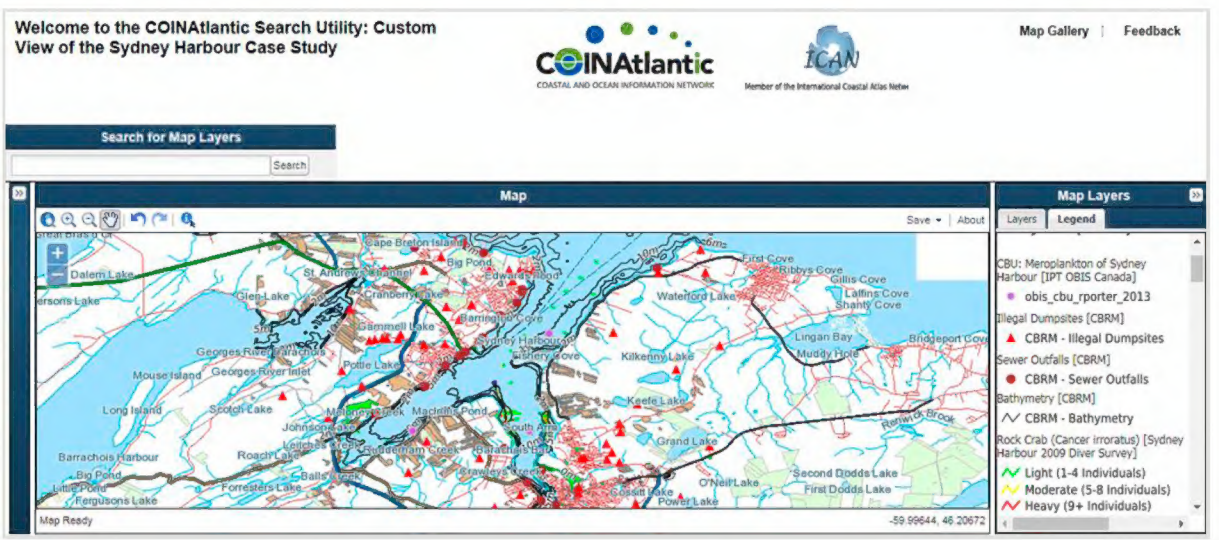

Figure 1.

Partial screen grab (search and additional information windows not shown) of the Sydney Harbour Atlas.

This paper presents the initial effort to create a Sydney Harbour Atlas in a partnership between the Coastal and Ocean Information Network Atlantic's (COINAtlantic) and the Bras D'Or Institute of Cape Breton University. COINAtlantic's mission is to promote, facilitate and influence information management, policies and programs that enhance Integrated Coastal and Ocean Management in Atlantic Canada (Boudreau and McKenna 2014). The development of Version 1 of the Atlas was a case study in a project to support this mission and the Bras D'Or Institute's vision of an atlas with principle funding from the Atlantic Ecosystem Initiative (Environment and Climate Change Canada) and the Canada Green Corps program of the United Nations Association of Canada. The principle objective of the larger project was to make accessible to the public and other researchers, species occurrence data using the Ocean Biogeographic Information System Canada (OBIS Canada) Information Publishing Tool (OBIS Canada IPT). The development of the Atlas was designed to demonstrate the display of these data in its environmental and spatial context.

A customized version of the COINAtlantic Search Utility (CSU) (http://coinatlantic.tools/csu/?mapset=sydney_harbour) has been developed to visualize the map layers assembled for the Atlas. The CSU is a search engine which uses the Google Search API to crawl its index for related spatial data in KML and WMS (Web Mapping Service) format, and then displays the results. The CSU also generates an internal data base of WMS and KML spatial data resources from the search results. This data base can be searched as an alternative to searching with the Google Search API (there are over 3,400 records in the data base pointing to remote geospatial services). The CSU enables the user to add any other WMS that is found by using the tool's search function or known to the user so that the species occurrence data can be viewed in its spatial and / or environmental context.

Version 1 of the Sydney Harbour Atlas displays, at opening, map layers from 4 main sources (see Table 1).

Table 1.

Examples of map layers for the Sydney Harbour Atlas by type of web mapping service.

Map Layer	Source organization
Remote Government Web Mapping Services	
Canadian Marine Multibeam Bathymetric Data Web Map Service (WMS)	Government of Canada Natural Resources Canada
Roads at 1:10,000 scale	Province of Nova Scotia, GeoNOVA
Cape Breton Regional Municipality (CBRM) via COINAtlantic Mapping Service	
Sewer Outfalls	CBRM via Bras D'Or Institute
OBIS Canada IPT COINAtlantic Web Mapping Service	
Meroplankton of Sydney Harbour	Cape Breton University
COINAtlantic Web Mapping Service	
Green Crab (*Carcinus maenas*)	Bras D'Or Institute

Future developments include the addition of more ecosystem relevant map layers, the publication of OGC compliant Web Feature Services that would permit the user to stylize and analyze the data in their own GIS environment, the improvement of the layers window to provide easier user access to the many layers without scrolling, and expanding the richness of the metadata displayed in the "Additional Layer Information" window.

Keywords

Atlas, web mapping services, urban ecosystem

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